FEDERAL SIGNAL
Safety and Security Systems / Industrial

Advancing security and well being

Model PS1000
Power Supply/Charger

Installation and Maintenance Manual

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Warranty – Seller warrants all goods for five years on parts and 2-1/2 years on labor, under the following conditions and exceptions: Seller warrants that all goods of Seller's manufacture will conform to any descriptions thereof for specifications which are expressly made a part of this sales contract and at the time of sale by Seller such goods shall be commercially free from defects in material or workmanship. Seller reserves the right at the Seller's discretion to "Repair and Return" or "Replace" any item deemed defective during the warranty period. This warranty does not cover travel expenses, the cost of specialized equipment for gaining access to the product, or labor charges for removal and reinstallation of the product. This warranty shall be ineffective and shall not apply to goods that have been subjected to misuse, neglect, accident, damage, improper maintenance, or to goods altered or repaired by anyone other than Seller or its authorized representative, or if five years have elapsed from the date of shipment of the goods by Seller with the following exceptions: lamps and strobe tubes are not covered under this warranty. Outdoor warning sirens and controllers manufactured by Federal Warning Systems are warranteed for two years on parts and one year on labor. No agent, employee, representative or distributor of Seller has any authority to bind the Seller to any representation, affirmation, or warranty concerning the goods and any such representation, affirmation or warranty shall not be deemed to have become a part of the basics of the sales contract and shall be unenforceable. THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OR MERCHANTABILITY, FITNESS FOR PURPOSE AND OF ANY OTHER TYPE, WHETHER EXPRESS OR IMPLIED. These warranties shall not apply unless Seller shall be given reasonable opportunity to investigate all claims for allegedly defective goods. Upon Seller's instruction a sample only of allegedly defective goods shall be returned to Seller for its inspection and approval. The basis of all claims for alleged defects in the goods not discoverable upon reasonable inspection thereof pursuant to paragraph 8 hereof must be fully explained in writing and received by Seller within thirty days after Buyer learns of the defect or such claim shall be deemed waived.

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Safety Messages to Installation and Service Personnel of Federal Signal Products

⚠ WARNING

Peoples lives depend on your proper installation of our products. It is important to follow all instructions shipped with the products. The selection of the mounting location for the device, its controls and routing of the wiring is to be accomplished under the direction of the Facilities Engineer and the Safety Engineer. In addition, listed below are some other important safety instructions and precautions you should follow:

- This unit must be installed by a qualified electrician in accordance with the National Electrical Code/ NFPA 70/NFPA 72/ANSI and with all local codes and authorities having jurisdiction.
- Read and understand all instructions before installing or operating this equipment.
- Consult the authority having jurisdiction in your area regarding the proper use and installation of this product.
- Do not connect this product to the system when power is on.
- After installation and completion of the initial system test, a program for periodic testing of this product must be established. Refer to NFPA 72G, local Fire Codes and the authority having jurisdiction for this information.
- Show these instructions to your Safety Engineer and then file them in a safe place and refer to them when maintaining and/or reinstalling the unit.

Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death.

Product Specifications

The Model PS1000 is a power supply/charger that converts an AC input to a 24 Vdc regulating output. It is intended for indoor use only.

Input

- PS1000: 115 Vac / 60 Hz, 4.4 A
- PS1000-240: 230 Vac / 50-60 Hz, 2.2A

Output

- 24 Vdc
- 8 A supply current in a non-alarm condition with 10 A supply current during the alarm for fire alarm applications
- 10 A supply current for access control applications
- Filtered and electronically regulated outputs
- Short circuit and thermal overload protection

Battery Backup

- Built-in charger for sealed lead-acid or gel batteries.
- Automatic switchover to stand-by battery when AC fails.
- 3.6 A maximum charge current
- Zero voltage drop when switched over to battery backup

Supervision

- AC fail supervision (Form C contacts)
- Low battery supervision (Form C contacts)
- Battery presence supervision (Form C contacts)

Additional Features

- AC input and DC output LED indicators
- Power supply, enclosure, cam lock, and battery leads

Agency Listings and Approvals (120 Vac Models Only)

- UL, CUL:

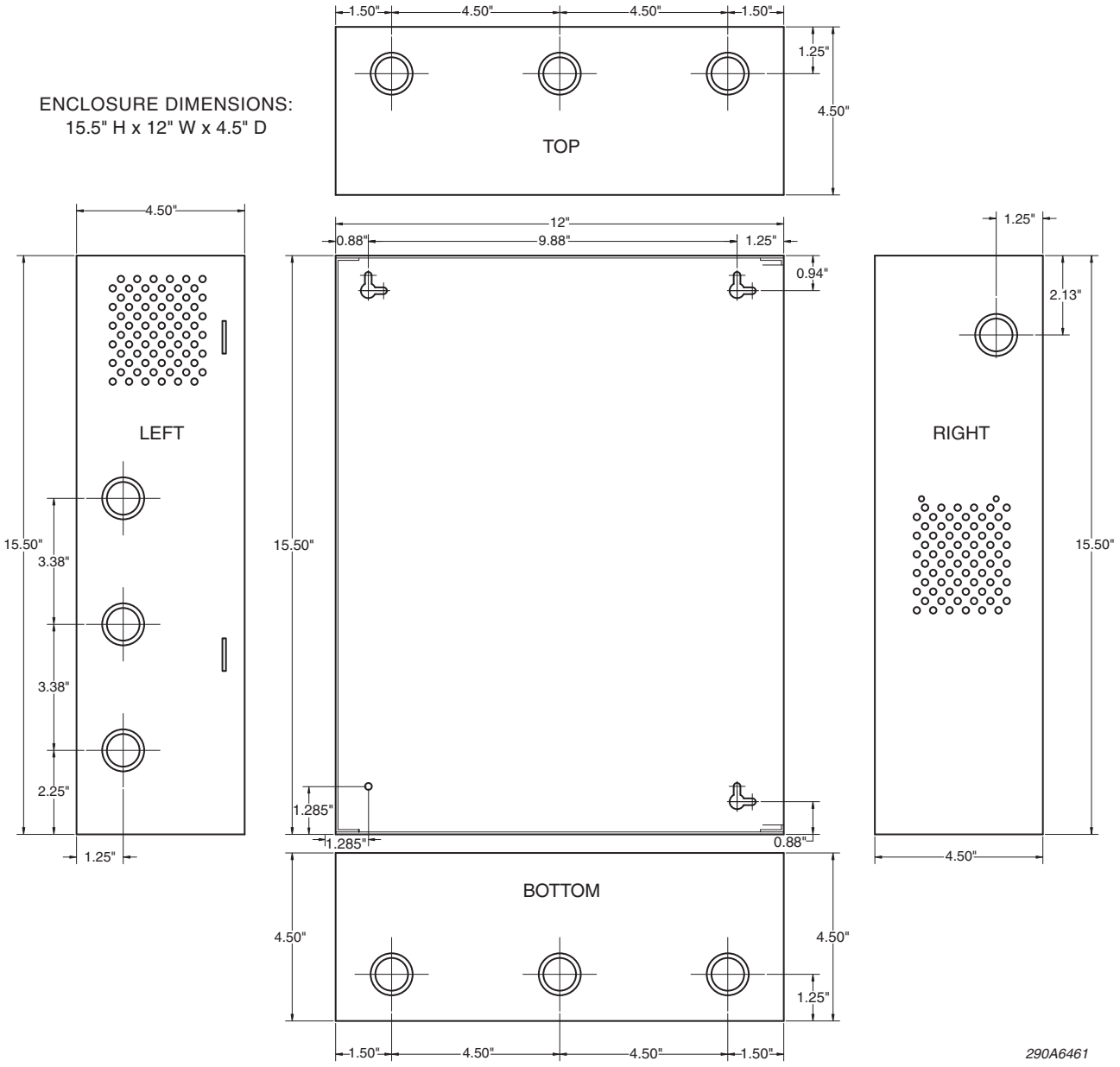
  UL File # S4707, UL 1481, UL Listed Standard for Safety for Fire Protective Signaling Systems.

  UL 294, UL Listed for Access Control System Units
- CSA: “Signal Equipment” Evaluated to CSA Standard C22.2 No. 205-M1983
- California State Fire Marshall
- Factory Mutual Approved

Standby Specifications (Total Current)

Output	15 Min. of Standby, 5 Min. of Alarm	4 Hr. of Standby, 5 Min. of Alarm	24 Hr. of Standby, 5 Min. of Alarm	60 Hr. of Standby, 5 Min. of Alarm
24 Vdc, 12 Ah Battery	Standby = 8 A Alarm = 10 A	Standby = 1.5 A Alarm = 10 A	Standby = 200 mA Alarm = 10 A	Standby = 100 mA Alarm = 10 A
24 Vdc, 65 Ah Battery	NA	Standby = 8 A Alarm = 10 A	Standby = 1.5 A Alarm = 10 A	Standby = 500 mA Alarm = 10 A

Figure 1 Enclosure dimensions



Installing and Maintaining the Model PS1000

Installing the Model PS1000 requires mounting the enclosure and wiring the PS1000. To calculate battery capacity, alarm duration, and other variables, use “Table 3 Battery-size calculation worksheet” on page 8.

For access control applications, standby batteries are optional. When standby batteries are not used, a loss of AC results in the loss of output voltage. When standby batteries are used, they must be lead-acid or gel.

Mounting the Model PS1000 Enclosure

For the enclosure dimensions, see Figure 1 on page 4.

Select a mounting location for the Model PS1000.

Mark and drill holes in the wall to line up with the top two keyholes in the enclosure.

Install two upper fasteners and screws in the wall with the screw heads protruding.

Place the upper keyholes of the enclosure over the two upper screws.

Level and the enclosure and tighten the two upper screws.

Mark the position of the lower two holes and remove the enclosure.

Drill the lower holes and install the three fasteners.

Place the upper keyholes of the enclosure over the two upper screws. Install the two lower screws and make sure to tighten all screws.

Secure the enclosure to earth ground.

Wiring the Model PS1000

For an illustration of the enclosure wiring, see Figure 2 on page 5. Keep the power limited wiring at least 0.25" away from non-power limited wiring, such as the AC input wires and battery wires.

⚠ WARNING ***SHORT CIRCUIT—Do not expose the Model PS1000 to rain or moisture. Failure to heed this warning may cause electrical shock or equipment damage.***

NOTICE ***EQUIPMENT DAMAGE—To avoid equipment damage, do not exceed a total output rating of 10 A for each Model PS1000 installed.***

To wire the Model PS1000:

To avoid damage to the equipment, measure the output voltage before connecting the Model PS1000. Ensure that the enclosure is connected to earth ground.

Use 22 AWG to 18 AWG wiring to connect AC power to the terminals marked **L**, **G**, **N**.

Use 14 AWG or thicker for all power connections (battery, DC output, AC input).

NOTE: Keep the power limited wiring separate from non-power limited wiring (AC input, battery wires). Minimum 0.25" spacing must be provided.

Connect the power distribution module to terminals marked **– DC +**.

Connect the appropriate signaling notification devices to the terminals marked **AC FAIL** and **BAT FAIL** (supervisory relay outputs.

When the Model PS1000 is used in fire alarm, burglar alarm, or access control applications, the **AC FAIL** relay must be used to provide a visual indication that AC power is on.

Insure that the cover is secured with the provided Key Lock.

Table 1 Terminal identification for power supply board

Terminal Legend	Function/Description
L, G, N	Connect 115 Vac to these terminals: **L** to Hot, **N** to Neutral, **G** to ground.
– DC +	24 Vdc at 8 A continuous, 10 A in alarm non-power limited output, 10 A continuous when batteries are not used.
AC FAIL **NO, C, NC**	Indicates loss of AC power when connected to an annunciator/alarm panel. The relays are normally energized when AC power is present. The contact rating is 1 A at 28 Vdc. AC or brownout fail is reported within 1 minute of event. To delay reporting for up to 6 hours, cut the AC delay jumper and reset the power to the Model PS1000.
BAT FAIL **NO, C, NC**	Indicates a low battery condition when connected to an annunciator/alarm. The relay is normally energized when DC power is present. The contact rating is 1 A at 28 Vdc. A removed battery is reported within 1 minute. Battery reconnection is reported within 1 minute. Low battery threshold is reported at approximately 21 Vdc.
+ BAT –	Standby battery connections. 3.6 A maximum charge rate.

Table 2 LED diagnostics on the power supply board

Red (DC)	Green (AC)	Power Supply Status
ON	ON	Normal operating condition
ON	OFF	Loss of AC. The standby battery is supplying power
OFF	ON	No DC output
OFF	OFF	Loss of AC. Discharged or no standby battery. No DC output.

Figure 2 Enclosure wiring

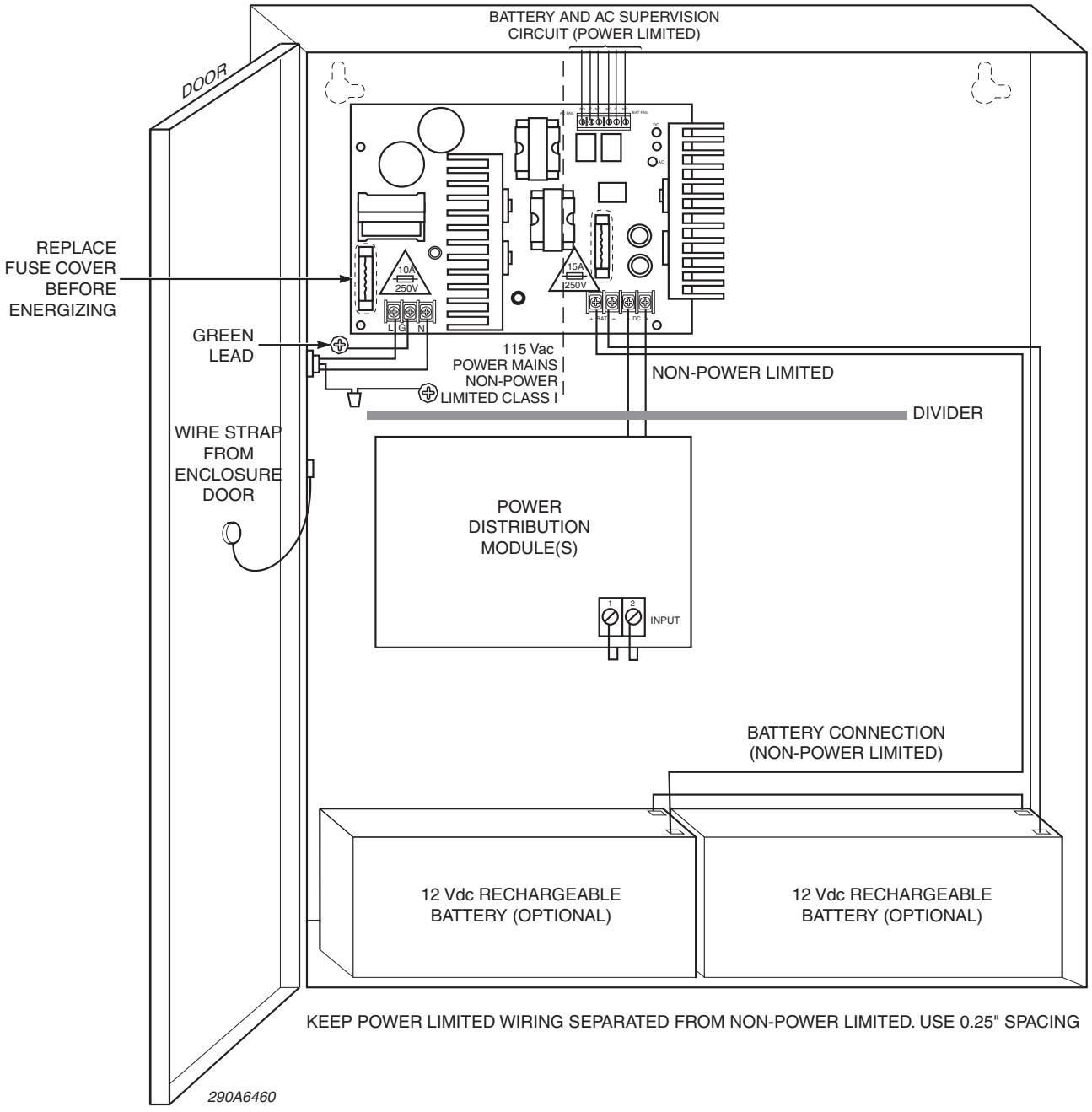


Table 3 Battery-size calculation worksheet

A.	Model PS1000 internal current consumption	(standby)	_____	0.05 A
B.	Load current consumption (standby)	(standby)	_____	A
C.	Standby time required	(hours)	_____	H
D.	Battery capacity required for standby	(A + B) ∗ C	_____	Ah
E.	Model PS1000 internal power consumption	(alarm)	_____	0.05 A
F.	Load current consumption	(alarm)	_____	A
G.	Alarm duration (hours, 15 min = 0.2 hour)	(alarm)	_____	H
H.	Battery capacity required for alarm	(E + F) ∗ G	_____	Ah
I.	Total calculated battery capacity	D + H	_____	Ah
J.	Battery capacity required	I ∗ 1.8 (safety factor)	_____	Ah

Notes: The Model PS1000 is designed to work with batteries up to 65 Ah.

Line I must not exceed 36 Ah. To keep Line I at or under 36 Ah, either reduce standby current consumption (Line A) or the standby time (Line C).

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To determine actual battery size, round line J to the nearest larger standard battery size, (e.g., 3.5 Ah = 4.0 Ah).

Maintaining the Model PS1000

⚠ WARNING

SHOCK AND FIRE HAZARDS—De-energize the Model PS1000 before servicing it. For continued protection against the risk of electric shock and fire hazard, replace the fuses with fuses of the same type and rating.

Input fuse: 10 A, 250 V

Battery fuse: 15 A, 32 V

Output Voltage Test: Under normal load conditions, the DC output voltage should be checked for proper voltage level.

Battery Test: Under normal load conditions, check that the battery is fully charged, check the specified voltage both at the battery terminal and at the board terminals marked **+ BAT –** to insure there is no break in the battery connection wires.

Notes: Maximum charging current under discharges is 3.6 A. Expected battery life is 5 years, however it is recommended that batteries are changed within 4 years, if needed.

Obtaining Service, Parts, and Support

Federal Signal will service your product, provide technical assistance support. Please call the phone numbers listed below. For instruction manuals, please go to http://www.federalsignal-indust.com

Repair Service

Products returned for repair require a Return Authorization form. To obtain service for the product, please contact the Federal Signal Service Department at 708-534-4858 or +1 877 289 3246.

Technical Assistance

For technical assistance, please call Technical Support at 708-534-3424, extension 5823 or +1 877 289 3246.

Replacement Parts

To order replacement parts, please call Federal Signal Customer Support at 708-534-4756 or +1 877 289 3246.

Returning a Product for Credit

Product returns for credit require a return authorization from your local distributor prior to returning the product to Federal Signal. Please contact your distributor for assistance.

A product is qualified to be returned for credit when the following conditions are met:

- Product is resalable and in the original cartons
- Product has not been previously installed
- Product is the current revision
- Product has not been previously repaired
- Product is a standard product
- Product is not a service part

All returns are subject to a re-stock fee.

Defective products that are returned within the warranty period will be repaired or replaced at Federal Signal's sole discretion. Defective products do not include those products with lamp failure.

Circumstances other than those listed above will be addressed on a case-by-case basis.

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